

EXHIBIT D

South Sound Geotechnical Consulting

December 27, 2013

State Farm Insurance Company
P.O. Box 52276
Phoenix, AZ 85072-2276

Attention: Mr. Randy Black

Subject: Summary of Geotechnical Engineering Observations
Norris Residence Damage Assessment
Plain, WA
State Farm Claim #47-26X8-510
SSGC Project No.: 13058

Dear Mr. Black:

South Sound Geotechnical Consulting (SSGC) has prepared this report regarding our assessment of damage to the Norris Residence at 25408 Riata Street in Plain, Washington. Our services have been performed in general conformance with our proposal (P13058, dated December 17, 2013) and authorized per your email correspondence on the same day. The purpose of our work is to assist in assessing the cause of a waterline break on the property which led to the damage. Our scope of services included a reconnaissance of the property, review of information provided by CASE Forensics, Inc, review of geologic and soil maps, and preparation of this report.

CLAIM INFORMATION

We understand that on (or about) December 4, 2013 a land failure occurred at the Norris residence at 25408 Riata Street in Plain, Washington. The failure resulted in portions of the east and southern sides of the house foundation being undermined of supporting soil. We further understand that the Norris's were not at the residence at the time of the failure.

A waterline break appears to be the major contributing cause of the failure. The cause of the waterline break is under investigation and currently considered possibilities include pipe freezing and rupture, or possible earth movement causing the waterline break. The residence is located near the top of a steep south-facing slope leading down to the Wenatchee River.

DOCUMENT REVIEW

The following documents were included in our review:

- "Geologic Map of the Chelan 30-minute by 60-minute Quadrangle, Washington", United States Geologic Survey (Map I-1661), 1987.
- "Preliminary Bedrock Geologic Map of the Chiwaukum 4 NW Quadrangle, Chiwaukum Graben, Washington", United States Geologic Survey (Open file report 80-456), 1980.

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- "Soil Survey of Chelan Area, United States Department of Agriculture, Soil Conservation Service, 1975.
- Copies of Email and phone correspondence between Mr. Scott Thomas of CASE Forensics and Mr. Peter Norris (owner) and Mr. Ken Severens (maintenance manager of Ponderosa Development).

SUMMARY OF PROVIDED INFORMATION

Information provided to SSGC includes:

- The early December (2013) failure impacted the residence and the south-facing slope adjacent to the house. We understand that a waterline break was reported on the Norris property by a neighbor who visited the site after responding to noise during the failure. The water supply to the house was shut off by maintenance personnel of the development.
- The location of the waterline break is unknown at this time, although the line was damaged adjacent to the house in the impacted area.
- We understand that a retaining wall was constructed to the east of the residence in (or about) 2009. Reportedly, prior to construction of the wall, the ground sloped down from east to west (towards the house). Several feet of soil in the slope was removed to construct the retaining wall. The wall is above the waterline leading to the house.

SITE OBSERVATIONS

SSGC visited the property on December 23, 2013. Our observations include:

- Most of the eastern foundation and a significant portion of the southern foundation of the Norris residence were undermined of soils. An erosional ravine extended from the southern foundation down the south-facing slope. The total height of soils removed was estimated at 10(+) feet at the top of the slope in the ravine, and about 8 (+/-) feet below the foundation. We estimate that the southernmost side of the house was about 10 feet from the top of the slope prior to the failure. The ravine trends straight down slope from about the center of the house.
- The south-facing slope has an average inclination between about 40 to 45 degrees, or 1H:1V (Horizontal:Vertical). It is covered with random Ponderosa pine with trunks measuring up to about 2 feet diameter, brush and grasses. Larger pine trees exhibited primarily straight trunks, which imply that surface soils are not experiencing significant creep.

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- Exposed soils in the void area around the house and in the ravine consist of layered silt, sand and gravel. In general the layering was horizontal. These soils were standing near vertical in the failed areas (sidewalls) suggesting that they are fairly dense or possibly have some cementation properties. Although the soils are mapped as alluvium, the nature of the vertical sidewalls in the failed areas suggests they could be glacial drift.
- No cracks or other evidence of distress was observed in the exposed foundation walls. A crack was observed on the west side of the house in the concrete panel closest to the failure area. This crack appeared fresh and may be a result of the soil undermining, or a result of apparent removal of decking in this portion of the house.
- The concrete retaining wall is located east of the residence near the east property boundary. It extended from near the street to about the southern side of the house. The wall varied in height, but was measured at a maximum exposed height of about 45 inches. It was 8 inches thick. No cracks or other evidence of distress was observed in the wall.
- Vertical PVC pipes were observed about 7 or so feet behind (east) of the wall. These appear to be utility conduits for water valves. The bases of these valves were on the order of 45 inches below the ground surface. One of the covers to the PVC pipes was painted blue. We assumed that this was the valve for the Norris residence. The exposed height of the wall immediately west of this valve (towards the house) was about 44 inches.
- Approximately 17 feet southwest of the southern end of the wall a white solid wall PVC pipe was observed protruding from the ground onto the surface. We interpreted this pipe to be a drain line for the wall. This pipe was connected to a black, perforated 4-inch diameter, flexible PVC pipe. This black pipe trended across the surface of the slope to the west and was hanging over the east side of the erosional ravine sidewall.

GEOLOGIC SETTING

The referenced USGS geology maps show that surface soils on the Norris property are mapped as Quaternary alluvium. Other mapped units in the area include glacial drift (of Quaternary age) and Tertiary sedimentary rocks of the Chumstick Formation. The USDA Soil Conservation Service maps soils in the area as Nard silt loam. Nard soils reportedly form in weathered sandstone. We interpret the exposed soils in the erosion area to represent glacial drift or alluvium.

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DISCUSSION

The amount of soil eroded from under (and around) the house and down the slope suggests that water had been accumulating around the foundation for a significant period of time before the top of the slope failed. Backfill soils around the foundation placed during construction of the house were likely in a looser condition than the surrounding native soils and would have been able to hold significant amounts of water. As the house foundation was relatively close to the slope, hydrostatic pressures from the water buildup between the house and the top of the slope would have become significant and overcame the natural passive pressure resistance of upper slope soils. Naturally occurring gravel seams observed in the exposed slope soils in the ravine could also have acted as conduits for groundwater, reducing the strength of the upper slope soils.

The waterline to the house enters on the east side. As the most erosion occurred on this side of the house (along with the southern slope) it appears that a break in the waterline resulted in the collection of water around the house foundation. It was not visibly obvious where the break occurred, but a break near the house, or anywhere in the waterline trench from the valve behind the retaining wall, would have resulted in water collecting around the foundation.

Depth of the water valve that is assumed to serve the Norris residence is near the elevation of the bottom of the exposed front of the wall. This suggests that the waterline leading to the residence is also near the bottom of the wall foundation and buried shallowly in front (west) of the wall towards the house. The waterline would be susceptible to freezing without adequate burial depth. Frost depth in this area is likely on the order of 2 feet or more. Based on our measurements of the valve depth and wall height, adequate frost depth burial of the waterline was likely compromised by construction of the retaining wall and soil removal in front of the wall.

SUMMARY OPINIONS

We make the following summary opinions:

- Evidence of previous slope movement was not observed at the time of our site visit on, or adjacent to, the Norris property. The eroded ravine in the slope provides a cross-section view of upper slope soils with no visible evidence of shear zones or other indicators of slope movement. Mature pines on the south-facing slope have typically straight trunks suggesting limited slope creep.
- The retaining wall and exposed portions of the house foundation did not exhibit signs of cracking or other distress that would be considered related to settlement or slope movement.
- It is our opinion that the waterline leading to the house broke resulting in the failure of the soils around the foundation and in the slope based on the information available to us at this time, and

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our observations at the site. The cause of the waterline break is more likely than not a result of the pipe freezing and rupturing. It was beyond the scope of our services to identify the location of the break, and it will likely require exposing the waterline from the house to the valve to find where the break occurred, as there may be more than one break in the line.

PRELIMINARY REPAIR DISCUSSION

The foundation of the house did not appear to be severely damaged and could be repaired in our opinion. We recommend that the undermined portion of the house is temporarily braced with cribbing or other suitable support as soon as practical. The exposed soils under the house appeared to be competent native glacial or alluvial soils that would be considered suitable for support of new foundations. Support options could include installing pin piles beneath the exposed foundation, filling the void with lean concrete or control density fill, or extending the existing foundation with new stem walls and footings to competent native soils. Additional geotechnical and structural engineering evaluations would be required to assess the most practical repair alternatives.

Repair of the slope below the house should include removal of all loose debris and slide material to firm native soils. Following removal of debris, the native soils at the base of the ravine should be benched in a stair-step fashion. Fill could then be placed on the benches and compacted to a firm condition to re-establish the original slope grade.

We are available to assist in further evaluating repair alternatives for the residence and the slope, as requested.

REPORT CONDITIONS

This report has been prepared for the exclusive use of State Farm Insurance Company for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices in the area. No warranties, either express or implied, are intended or made. The opinions contained in this letter are based on conditions observed at the time of our site visit on December 23, 2013 and review of the provided and referenced documents. Should site conditions presented in this document change, or new information become available, the conclusions contained herein shall not be considered valid unless SSGC reviews the new/revised information and either verifies or modifies the conclusions in writing.

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We appreciate the opportunity to work with you on this project. Please contact us if we can be of further assistance.

Respectfully,

South Sound Geotechnical Consulting



Timothy H. Roberts, P.E., R.G.
Member/Geotechnical Engineer

Attachments: Site Photos (1 – 4) from 12/23/13